Claims

1. Compressor, especially an axial piston compressor for a vehicle air-conditioning system, having a housing delimiting a drive mechanism chamber (17), having a cylinder block in which at least one piston is mounted so as to be axially displaceable back and forth, and having a cylinder head having a suction side and a delivery side, there being provided between the drive mechanism chamber (17) and the suction side (18) a fluid connection (12, 13) in which there is arranged a regulating valve (10) by means of which, starting from a predetermined pressure difference between the drive mechanism chamber (17) and the suction side (18), the fluid connection between the drive mechanism chamber and the suction side is increasingly throttled as the pressure difference further increases and is, in the extreme case, closed completely, in particular the free cross-section of the fluid connection being reduced in such a manner that the mass flow flowing out of the drive mechanism chamber is maintained approximately at a constant low level.

2. Compressor according to claim 1,
characterised in that,
in the event of a predetermined higher pressure difference between the drive mechanism chamber (17) and the suction side (18), the regulating valve (10) re-opens their fluid connection so that a predetermined lower pressure difference can be established.

3. Compressor according to claim 1 or 2,
characterised in that
the throttling behaviour of the regulating valve (10) with increasing pressure difference between the drive mechanism chamber (17) and the suction side (18) is linear, progressive, degressive and/or stepped.

4. Compressor according to one of claims 1 to 3,
characterised in that
the regulating valve (10) comprises a cylinder space (11), which has fluid connections (lines 12, 13) with the drive mechanism chamber (17), on the one hand, and with the suction side (18), on the other hand, and within which a piston (14) is

mounted so as to be displaceable back and forth especially in each case against the action of a resilient element (15, 16), wherein the piston (14), in dependence on the pressure difference acting on the piston (14) corresponding to the pressure difference between the drive mechanism chamber (17) and the suction side (18), opens the fluid passageway between the drive mechanism chamber and the suction side to a greater or lesser extent, and in the extreme case closes it completely.

5. Compressor according to claim 4,
characterised in that
the piston (14) of the regulating valve (10) is a hollow piston open at one end face, in the wall (19) of which there is formed at least one axially extending, especially slot-shaped, passageway (20), with which passageway (20) there is associated the suction side or a fluid line (13) in communication with the suction side (18) and opening out laterally into the cylinder space (11), whilst the internal space (21) of the piston (14) has, by way of its open end face (22), a fluid connection (line 12) with the drive mechanism chamber (17).

6. Compressor according to claim 4 or 5,
characterised in that
the suction side (18) is also applied to the closed end face of the piston (14) or, that is to say, its piston base (23).

7. Compressor according to one of claims 4 to 6,
characterised in that
the piston (14) of the regulating valve (10) is clamped between two spring elements, especially helical compression springs (15, 16), in contact with its end faces, within the cylinder space (11).

8. Compressor according to claim 7,
characterised in that
the spring elements (15, 16) are integrally connected to the piston (14).

9. Compressor according to one of claims 4 to 8,
characterised in that
the wall (19) of the piston (14) has a second passageway (27) which is spaced axially away from the first passageway in the direction of the delivery (high-pressure) side and which comes into effect after a predetermined higher pressure difference between the drive mechanism chamber (17) and the suction side (18) has been exceeded and opens or frees the fluid connection between the drive mechanism chamber and the suction side for reducing the higher pressure difference.

10. Compressor according to one or more of claims 1 to 9,
characterised in that
in the flow path of the regulating valve (10), especially in its piston (14), there are arranged means for separating out lubricants, particles or the like.

11. Compressor according to one or more of claims 1 to 10,
characterised in that
the piston (14) of the regulating valve (10) is made from steel, steel alloy, light metal, especially aluminium, and/or plastics material.

12. Compressor according to claim 11,
characterised in that,
when the piston (14) is made of plastics material, the spring elements in contact with the end faces, especially the helical compression springs (15, 16), are integrated into the plastics material by casting or are embedded therein.

13. Compressor according to one of claims 4 to 12,
characterised in that
the passageway (20) associated with the suction side (18) is located in the wall (19) of the piston (14) within an inward bulge, especially an annular inward bulge, and/or the opening of the fluid line (13) opening laterally into the cylinder space (11) and in communication with the suction side (18) is located within an outward bulge, especially an annular outward bulge or annular groove, so that the function of the regulating valve (10) is maintained even in the event of rotation of the piston (14) about its longitudinal axis.

14. Compressor according to one of claims 6 to 13,
characterised in that
on the outside of the piston wall (19) and/or on the cylinder wall delimiting the cylinder space there are formed one or more longitudinal grooves, by means of which a fluid connection between the suction side (18) and that part of the cylinder space which is located beneath the piston base (23) is maintained.

15. Compressor according to one of claims 5 to 14,
characterised in that
the slot-shaped passageway (20) in the wall (19) of the piston (14) of the regulating valve (10) becomes wider or narrower either continuously or stepped in one direction axially, in dependence on the desired regulation behaviour, especially becoming narrower either continuously or stepped towards the drive mechanism delivery side, so that the mass flow flowing out of the drive mechanism space remains substantially constant.